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EXAMINER	
LLOYD, EMILY M	

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3736	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/691,552	SHIN ET AL.	
	Examiner	Art Unit	
	EMILY M. LLOYD	3736	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _18 January 2008_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-19_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-19_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _24 October 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the amendment filed 18 January 2008. The Examiner acknowledges the amendments to the specification and the amendments to claims 1, 10-12, and 15. Currently, claims 1-19 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 12-14 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mapping Acupuncture Points Using Multi Channel Device (Kwok et al.) in view of United States Patent Application 2001/0034491 (Benson et al.) and United States Patent 4517983 (Toyosu et al.).

Regarding claim 12, Kwok et al. disclose a method of acquiring a local skin impedance (Method heading in left column of page 69, skin resistance map Figure 4 page 72), comprising: (a) measuring skin resistance during steady electrical conditions for a predetermined time period (120 seconds, page 69 Method paragraph 1 line 16); (b) positioning a multi-channel electrode having a plurality of measurement sensors (flat-ended pins act as electrodes page 69 Hardware Design paragraph 1 line 3) parallel to the region to be measured (multi-channel probe in Figure 3 page 71); and (c) measuring skin impedance at the region to be measured (page 69 Hardware Design paragraph 1 lines 25-30 and line 36).

Kwok et al. disclose the claimed invention except for the steps of (a) disposing two electrodes of a constant current source centering around a region to be measured on a patient's skin and applying a predetermined constant current to the skin through the two electrodes; (b) controlling pressure applied to each of the measurement sensors of the multi-channel electrode so that the pressure applied by the measurement sensors can be varied; and (c) applying the predetermined constant current between the two electrodes of the constant current source and measuring impedance while the

predetermined constant current is being applied. Benson et al. teach the use of the steps of (a) disposing two electrodes of a constant current source centering around a region to be measured on a patient's skin (electrodes A and D, Figures 1 and 2, and constant current generation circuit 12 Figure 2) and applying a predetermined constant current to the skin through the two electrodes ([0032] lines 10-13); and (c) applying the predetermined constant current between the two electrodes of the constant current source ([0032] lines 10-13) and measuring impedance while the predetermined constant current is being applied ([0032] lines 13-18). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use such steps of (a) disposing two electrodes of a constant current source centering around a region to be measured on a patient's skin and applying a predetermined constant current to the skin through the two electrodes; and (c) applying the predetermined constant current between the two electrodes of the constant current source and measuring impedance while the predetermined constant current is being applied as taught by Benson et al. to measure skin impedance in the invention of Kwok et al. because this would provide a well known alternative to measure impedance with Ohm's Law.

Kwok et al. as modified by Benson et al. teach the claimed invention except for the step of (b) controlling pressure applied to each of the measurement sensors of the multi-channel electrode so that the pressure applied by the measurement sensors can be varied. Toyosu et al. teach (b) controlling pressure applied to each of the measurement sensors of the multi-channel electrode so that the pressure applied by the measurement sensors can be varied (coil spring 13 and pin contact 5N, Figure 6). It

would have been obvious to one having ordinary skill in the art at the time the invention was made to use such a step of (b) controlling pressure applied to each of the measurement sensors of the multi-channel electrode so that the pressure applied by the measurement sensors can be varied as taught by Toyosu et al. in the invention of Kwok et al. as modified by Benson et al. to provide the predictable result of ensuring that all the electrodes are in contact with the body surface (Toyosu et al. Column 2 lines 27-29) even if the device is turned or upside down (coil springs 13 would keep pin contacts 5N in contact with the body).

Regarding claim 13, Kwok et al. as modified by Benson et al. and Toyosu et al. disclose that the multi-channel electrode comprises: a plurality of measurement sensors arranged in a matrix shape on an electrode surface having a predetermined area (Kwok et al. "precise 16x16 square grid pattern" page 69 Method paragraph 1 line 2 and "8 cm by 8 cm" page 69 Hardware Design paragraph 1 line 6).

Regarding claim 14, Kwok et al. as modified by Benson et al. and Toyosu et al. disclose that the measurement pressure is adjusted depending on a curvature of the region to be measured during measurement of skin impedance (Toyosu et al. the measurement pressure would adjust over a curve based on the amount of compression of the coil spring 13 of each pin contact 5N).

Regarding claim 17, Kwok et al. as modified by Benson et al. and Toyosu et al. disclose a computer readable medium having embodied therein a computer program (Kwok et al. "computer software developed for the probe" page 70 Software Design

paragraph 1 line 4 on a PC page 70 Software Design paragraph 1 line 19) for the method of claim 12 (see 103 rejection of claim 12 above).

Regarding claim 18, Kwok et al. as modified by Benson et al. and Toyosu et al. disclose a computer readable medium having embodied therein a computer program (Kwok et al. "computer software developed for the probe" page 70 Software Design paragraph 1 line 4 on a PC page 70 Software Design paragraph 1 line 19) for the method of claim 14 (see 103 rejections of claims 12 and 14 above).

6. Claims 1-5, 7-11, 15-16, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kwok et al. as modified by Benson et al. and Toyosu et al. as applied to claims 12-14 and 17-18 above, and further in view of United States Patent Publication 2002/0062090 (Chai et al.).

Regarding claim 1, Kwok et al. as modified by Benson et al. and Toyosu et al. disclose an apparatus for measuring local skin impedance, comprising: a multi-channel electrode (Kwok et al. multi-channel probe page 36 Hardware Design paragraph 1 line 1) including a plurality of measurement sensors (Kwok et al. flat-ended pin acting as an electrode page 69 Hardware Design paragraph 1 line 3) on an electrode surface (Kwok et al. electrode array page 69 Hardware Design paragraph 1 line 4) having a predetermined area (Kwok et al. 8 cm by 8 cm page 69 Hardware Design paragraph 1 line 6); a channel selector (Kwok et al. multiplexers page 69 Hardware Design paragraph 1 lines 9-23) configured to select each of the channels included in the multi-channel electrode according to a channel control signal (Kwok et al. page 70 Software Design paragraph 1 lines 12-13); a constant current source for applying a

predetermined constant current to a region to be measured (Benson et al. constant current generation circuit 12 Figure 2 and [0032] lines 10-13); a preprocessing unit configured to filter a potential value measured at each of the channels while the predetermined constant current is flowing through the region to be measured (Kwok et al. page 69 Method paragraph 2 line 4); an analog-to-digital converter configured to convert the potential value output from the preprocessing unit into a digital signal (Kwok et al. page 70 Software Design paragraph 1 line 14); and a control unit configured to generate the channel control signal, to process the digital signal output from the analog-to-digital converter, and to control the entire apparatus (Kwok et al. PC (page 70 Software Design paragraph 1 line 19) running computer software (page 70 Software Design paragraph 1 lines 4-5 and lines 12-16), see also page 69 Method paragraph 2 lines 1-6), wherein the apparatus is configured to control pressure applied to each of the measurement sensors so that the pressure applied by the measurement sensors can be varied (Toyosu et al. coil spring 13 of each pin contact 5N, Figure 6).

Kwok et al. as modified by Benson et al. and Toyosu et al. disclose the claimed invention except for an amplifier. Chai et al. teach the use of an amplifier (differential amplifier 80 Figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use such an amplifier as taught by Chai et al. to amplify the signals in the invention of Kwok et al. as modified by Benson et al. and Toyosu et al. because it is well known in the art to amplify electrical signals.

Regarding claim 2, Kwok et al. as modified by Benson et al., Toyosu et al., and Chai et al. disclose that the plurality of measurement sensors is arranged in a matrix

shape on the electrode surface (Kwok et al. "precise 16 x 16 square grid pattern" page 69 Method paragraph 1 line 2).

Regarding claim 3, Kwok et al. as modified by Benson et al., Toyosu et al., and Chai et al. disclose that the measurement sensors are pin electrodes made of a metal conductor (Toyosu et al. Column 4 lines 37-38) and include a spring (Toyosu et al. coil spring 13 Figure 6).

Regarding claim 4, Kwok et al. as modified by Benson et al., Toyosu et al., and Chai et al. disclose that the multi-channel further comprises twenty-five (25) measurement sensors arranged in a 5x5 matrix (Kwok et al. a 5x5 matrix is comprised in a 16x16 matrix, page 69 Method paragraph 1 line 2).

Regarding claim 5, Kwok et al. as modified by Benson et al., Toyosu et al., and Chai et al. disclose that a pressure applied to each of the measurement sensors is adjusted depending on a curvature of the region to be measured during measurement of skin impedance (Toyosu et al. the measurement pressure would adjust over a curve based on the amount of compression of the coil spring 13 of each pin contact 5N).

Regarding claim 7, Kwok et al. as modified by Benson et al., Toyosu et al., and Chai et al. disclose that the constant current source comprises: a positive electrode and a negative electrode (Benson et al. electrodes A and D, Figures 1 and 2), which are attached to a location on skin (Benson et al. [0032] lines 10-13) centering around the region to be measured (Benson et al. electrodes B and C are centered between electrodes A and D, Figure 1, see also [0032] lines 13-16) such that the positive and negative electrodes are separated from the region to be measured by a predetermined

distance (Benson et al. distances between electrodes in Figure 1), and the predetermined constant current output from the constant current source is applied to the skin through the positive electrode, then output from the skin through the negative electrode, and then flows back in the constant current source.

Regarding claim 8, Kwok et al. as modified by Benson et al., Toyosu et al., and Chai et al. disclose that the preprocessing unit comprises: a differential amplifier (Chai et al. differential amplifier 80 Figure 1) and a filter (Kwok et al. page 69 Method paragraph 2 line 4).

Regarding claim 9, Kwok et al. as modified by Benson et al., Toyosu et al., and Chai et al. disclose the use of a low pass filter (Chai et al. low pass filter (LPF) 100 Figure 1). Kwok et al. as modified by Benson et al., Toyosu et al., and Chai et al. do not disclose the specific cut-off frequency or the specific type of filter. However, a Butterworth filter with a cutoff frequency of 4 Hz is a well-known low pass filter. Applicant has not disclosed that having the cutoff frequency at any specific number of Hertz within the low filter range and the filter being a Butterworth filter solves any stated problem or is for any particular purpose. Moreover, it appears that the filter of Kwok et al. as modified by Benson et al., Toyosu et al., and Chai et al., or applicant's invention, would perform equally well with a low pass filter with a different low frequency cutoff and a different low pass filter type.

Accordingly, it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have modified Kwok et al. as modified by Benson et al., Toyosu et al., and Chai et al. such that the cutoff frequency was set at 4

Hz or less and the filter was a Butterworth filter because such a modification would have been considered a mere design consideration which fails to patentably distinguish over Chai et al.

Regarding claim 10, Kwok et al. as modified by Benson et al., Toyosu et al., and Chai et al. disclose that the control unit comprises: a personal computer configured to control the apparatus (Kwok et al. PC page 70 Software Design paragraph 1 line 19); and a signal processor configured to generate the channel control signal and express the potential values acquired at each of the channels of the multi-channel electrode (Kwok et al. page 70 Software Design paragraph 1 lines 22-24) as a two-dimensional impedance distribution and a three-dimensional impedance distribution under a control of the personal computer (Kwok et al. Figure 4 is a two-dimension impedance distribution, which shows the same data displayed in a three-dimensional impedance distribution with the degree of shading representing the third axis orthogonal to the paper. The data values used to represent the shading in a two-dimensional distribution are the same values used to represent the three-dimensional curves and shading on a three-dimensional impedance distribution. It would have been obvious to display the data used in the two-dimensional distribution of Figure 4 of Kwok et al. in a three-dimensional distribution because different plots give people different views (and thus highlight different aspects) of the same data).

Regarding claim 11, Kwok et al. as modified by Benson et al., Toyosu et al., and Chai et al. disclose that the signal processor is configured to analyze and perform a measurement generally performed by an instrument such as an oscilloscope using the

personal computer (Kwok et al. "computer software developed for the probe" page 70 Software Design paragraph 1 line 4; Kwok et al. page 70 Software Design paragraph 1 lines 22-24).

Regarding claim 15, Kwok et al. as modified by Benson et al., Toyosu et al., and Chai et al. disclose a method of measuring local skin impedance (Kwok et al. Method heading in left column of page 69, skin resistance map Figure 4 page 72), comprising: measuring a potential value (Kwok et al. page 69 Method paragraph 1 lines 10-14) at each of a plurality of channels (Kwok et al. "all 256 pins" page 69 Method paragraph 1 line 16) included in a multi-channel electrode (Kwok et al. multi-channel probe" page 69 Hardware Design paragraph 1 line 1) disposed between two electrodes of a constant current source for applying a predetermined constant current to a patient's skin through the two electrodes (Benson et al. electrodes A and D, Figures 1 and 2, and constant current generation circuit 12 Figure 2), the multi-channel electrode includes a plurality of measurement sensors (Kwok et al. flat-ended pins act as electrodes page 69 Hardware Design paragraph 1 line 3); controlling pressure applied to each of the measurement sensors of the multi-channel electrode so that the pressure applied by the measurement sensors can be varied (Toyosu et al. coil spring 13 and pin contact 5N, Figure 6); amplifying (Chai et al. differential amplifier 80 Figure 1) and filtering the potential value at each channel (Kwok et al. page 69 Method paragraph 2 line 4); converting the filtered potential value from an analog format into a digital format (Kwok et al. page 70 Software Design paragraph 1 lines 13-16); and analyzing the potential value in the digital format and displaying the results of the analysis in a form of a spatial impedance distribution in

two and three dimensions (Kwok et al. page 70 Software Design paragraph 1 lines 22-24 and paragraph 2 lines 1-12, also Figure 4, additionally see the discussion of spatial impedance distributions in different dimensions in the 103 rejection of claim 10 above).

Regarding claim 16, Kwok et al. as modified by Benson et al., Toyosu et al., and Chai et al. disclose that the multi-channel electrode comprises: a plurality of measurement sensors arranged in a matrix shape on an electrode surface having a predetermined area (Kwok et al. "precise 16x16 square grid pattern" page 69 Method paragraph 1 line 2 and "8 cm by 8 cm" page 69 Hardware Design paragraph 1 line 6).

Regarding claim 19, Kwok et al. as modified by Benson et al., Toyosu et al., and Chai et al. disclose a computer readable medium having embodied therein a computer program (Kwok et al. "computer software developed for the probe" page 70 Software Design paragraph 1 line 4 on a PC page 70 Software Design paragraph 1 line 19) for the method of claim 16 (see 103 rejection of claim 16 above).

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kwok et al. as modified by Benson et al., Toyosu et al., and Chai et al. as applied to claims 1-5 and 7-19 above, and further in view of The design and fabrication of a micro-thermal/pressure-sensor for medical electro-skin application (Ho).

Regarding claim 6, Kwok et al. as modified by Benson et al., Toyosu et al., and Chai et al. disclose the claimed invention except for the multi-channel electrode comprising a micro-electro-mechanical system (MEMS) electrode. Ho teaches the use of a micro-electro-mechanical system (MEMS) electrode (page 1205 Introduction paragraph 2 lines 1-7). It would have been obvious to one having ordinary skill in the

art at the time the invention was made to use such a micro-electro-mechanical system (MEMS) electrode as taught by Ho to take measurements in the invention of Kwok et al. as modified by Benson et al., Toyosu et al., and Chai et al. because this would make the device smaller and able to be used on smaller areas and to better pinpoint acupuncture points.

Response to Arguments

8. Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EMILY M. LLOYD whose telephone number is (571)272-2951. The examiner can normally be reached on Monday through Friday 8:30 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 571-272-4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Emily M Lloyd
Examiner
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